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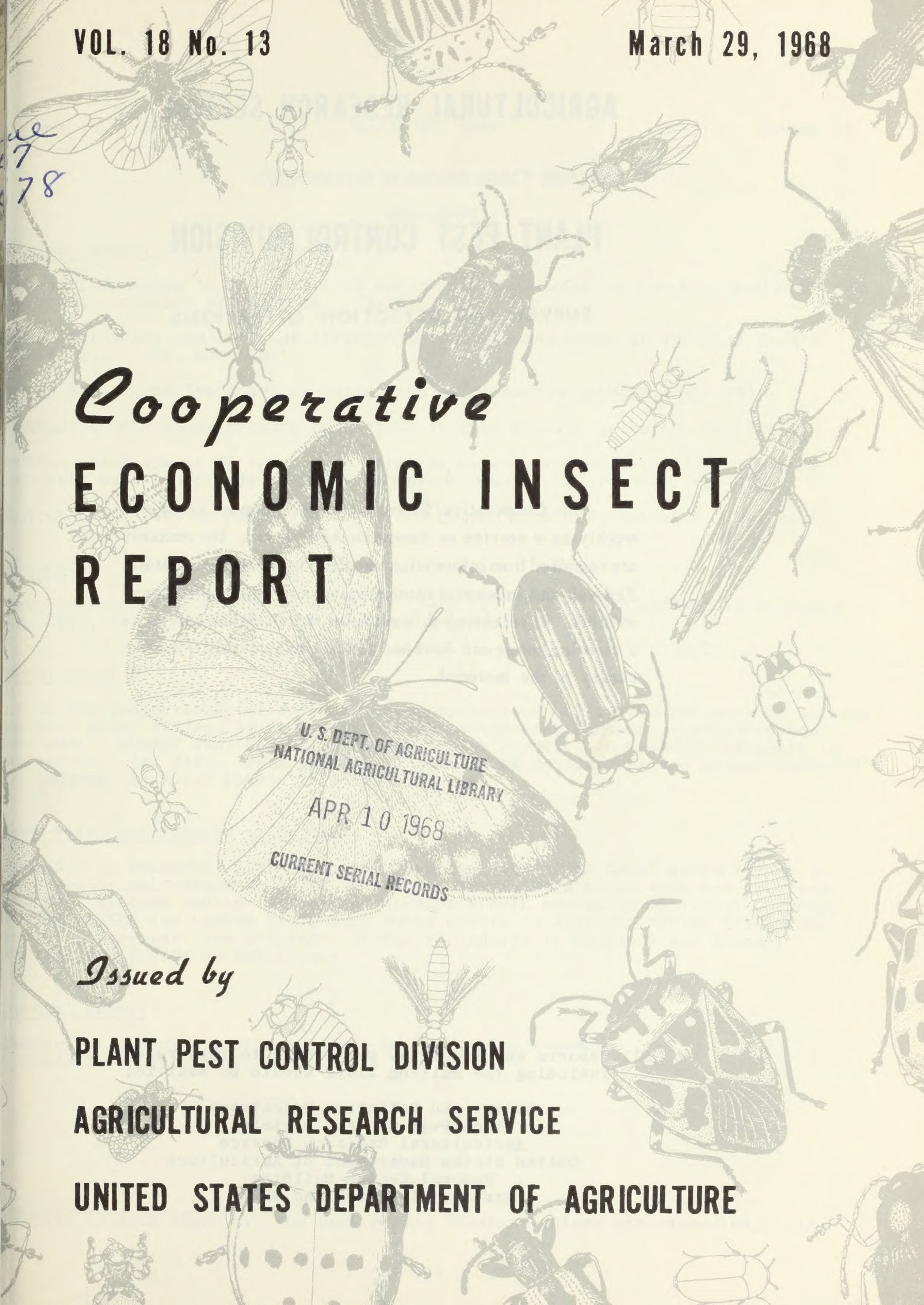

Cooperative
ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 18 March 29, 1968 Number 13

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG damaging in 4 counties of northern Texas; heavy in wheat in southwest and panhandle counties of Oklahoma. (p. 233).

PEA APHID heavy and EGYPTIAN ALFALFA WEEVIL becoming heavy in Imperial County, California. (pp. 234, 235).

LYGUS BUGS unusually heavy on cotton and safflower in ARIZONA. (p. 235).

CABBAGE LOOPER major problem on lettuce in Yuma County, Arizona. (p. 236).

PURPLE SCALE lowest on record for March on Florida citrus. (p. 237). CITRUS RED MITE heavy on citrus in San Luis Obispo County, California. (p. 238).

CATTLE LICE heavy on cattle in Mayes and Cotton Counties, Oklahoma. (p. 240).

Detection

New State records include an APHID in Idaho (p. 237), a BARK BEETLE in Delaware (p. 239), and an ARMORED SCALE in Rhode Island (p. 250).

Predictions

LYGUS BUG projections for July indicate populations of 100,000 per acre on alfalfa in Salt River Valley, Arizona; heavy numbers expected on safflower and cotton. (p. 235). FOREST TENT CATERPILLAR infestation expected to increase slightly in Minnesota. (p. 245). FALL and SPRING CANKERWORM populations and damage expected to increase in North Dakota in 1968. (p. 246).

Some First Occurrences of Season

HORN FLY in Oklahoma; SEED-CORN MAGGOT adults and APPLE GRAIN APHID flight in Washington; SALT-MARSH CATERPILLAR adults, WHITE PEACH SCALE eggs and crawlers, and FALL WEBWORM adults in Florida; ALFALFA WEEVIL adults in Maryland; COLORADO POTATO BEETLE and LESSER PEACH TREE BORER adults in Alabama; SPRING CANKERWORM moths in Wisconsin and Nebraska; STABLE FLY adults in Nebraska and Nevada; PACIFIC COAST TICK in California.

Special Report

Summary of Insect Conditions in the United States - 1967
Shade Trees (pp. 244-250).

Reports in this issue are for week ending March 22 unless otherwise indicated.

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Summary of Insect Conditions in the United States - 1967

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WEATHER FOR THE WEEK ENDING MARCH 25

HIGHLIGHTS: Cool weather prevailed from Nevada to the lower Ohio River Valley and southward but much of the Northeast enjoyed the warmest week since early in November 1967. The heavy snow which fell from eastern New Mexico to Kentucky and northeastward to New England melted quickly.

PRECIPITATION: Generous rains fell on Sunday and Monday, March 17 and 18, from Virginia to New England. Local flooding occurred in Rhode Island and eastern Massachusetts on Tuesday due to snow melt, ice jams, and 2 days of heavy rains. Light to moderate precipitation -- mostly snow but in some areas mixed with rain -- fell across the northern Great Plains early in the week. Freezing rain iced power and communication lines in eastern North Dakota on Tuesday. More rains fell from eastern Texas to the Great Lakes on Tuesday and spread eastward to New England on Wednesday and Thursday. Heavy snow fell from New Mexico to Kentucky at midweek. Some areas on the eastern slopes of the Rockies in New Mexico received 6 to 12 inches with 9-inch falls common in western Texas. The snow spread

Weather of the week continued on page 241.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - TEXAS - Survey conducted in 29 panhandle counties March 2-18 and in 13 Rolling Plains counties March 8-9. Populations in Panhandle ranged from 20-100 per row foot in Hale, Oldham, Hartley, Dallam, Sherman, Moore, Potter, and Ochiltree Counties to 2,000 per row foot in Floyd, Hall, and Hemphill Counties. Damage not extensive in Panhandle as moisture adequate and wheat growing. Predators active in some counties. Braconids active in few southern panhandle counties. Populations present in all 13 Rolling Plains counties surveyed; ranged 5-10 per row foot in Stonewall, Jones, Taylor, Callahan, Shackelford, Throckmorton, and Kent Counties and 50-200 per row foot in Crosby, Dickens, Fisher, Baylor, Wilbarger, and Hardeman Counties. Decreased in Rolling Plains area past 2 weeks; predators active in some counties. Braconids active in few counties. Much control used in Rolling Plains area. (Daniels). Current populations of 200 per linear foot being tolerated by wheat in Rolling Plains area; controls applied in many fields. Heavy populations damaged wheat in some areas of Foard, Hardeman, Motley, Childress, Cottle, King, Wilbarger, and Stonewall Counties March 4-8; light to moderate numbers causing some damage in Fisher, Hall, Baylor, and Wichita Counties. Damage decreasing in Knox and Archer Counties; numbers spotty in north-central area. (Boring, Turney). NEW MEXICO - Ranged 6-10 per linear foot in barley in Carlsbad area, Eddy County. (Mathews). OKLAHOMA - Scattered and heavy, 100-300 per square foot, in wheat in panhandle and southwest counties; 3-10 in central, north-central, and northeast counties. Most counts highest in sandy soils. (Okla. Coop. Sur.). KANSAS - Continues decrease in south-central area. (Simpson). NEBRASKA - Live aphids in Hayes County in January; no living aphids detected since in any wheat areas. Aphid mummies common where wheat infested last fall; predators active on warm days. (Andersen et al.). ARKANSAS - Survey negative in wheat in northwest area. (Ark. Ins. Sur.). MISSISSIPPI - Moderate, 35-40 per square foot, on Oktibbeha County wheat. (Dinkins). ALABAMA - Light on crimson clover throughout southwest area. (McQueen).

ARMY CUTWORM (Chorizagrotis auxiliaris) - OKLAHOMA - Ranged 2-10 per square yard in wheat in Kingfisher and Garfield Counties; 4-15 in Major County. (Okla. Coop. Sur.). KANSAS - Counts per row foot in wheat by county: Cowley 1-10, Sedgwick 0-2, Sumner 1-5. (Redding). NEBRASKA - Larvae active in wheat near Stratton, Hitchcock County. (Roselle). WYOMING - Infested small localized area around Cody, Park County. (Hurich).

CORN LEAF APHID (Rhopalosiphum maidis) - CALIFORNIA - Very spotty on Imperial County barley. Grain maturing rapidly; treatment will not be necessary in many fields. (Cal. Coop. Rpt.). ARIZONA - Ranged 15-20 per boot of barley in scattered infestations. No controls reported in Maricopa, Pinal, and Yuma Counties. (Ariz. Coop. Sur.). NEW MEXICO - Ranged 20-23 per 25 sweeps in wheat in Carlsbad area, Eddy County. (Mathews). TEXAS - Detected on forage sorghum at Bandera, Bandera County. (Lindig, Mar. 15).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Average 500+ per 100 sweeps on nonresistant alfalfa at Yuma, Yuma County, March 9-15. Generally not abundant in most Maricopa, Pinal, and Yuma County alfalfa. (Ariz. Coop. Sur.). NEW MEXICO - Ranged 2-8 per 25 sweeps near Carlsbad, Eddy County (Mathews); heavy and damaging in some fields in Artesia area (Campbell). OKLAHOMA - Light on alfalfa in Bryan County. (Okla. Coop. Sur.). ARKANSAS - Survey negative in northwest area. (Boyer).

CORN EARWORM (Heliothis zea) - NEW MEXICO - Few eggs found on lettuce in central Dona Ana County. (Elson).

CORN, SORGHUM, SUGARCANE

SEED-CORN MAGGOT (Hylemya platura) - WASHINGTON - Large numbers of adults appearing at Yakima, Yakima County. (Landis, Mar. 15).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - ALABAMA - Ranged 2-10 on 10 to 20-inch high wheat in most fields examined in Mobile, Baldwin, and Escambia Counties. (Deakle et al.). OKLAHOMA - Ranged 4-5 per row foot in Logan County wheat. (Okla. Coop. Sur.). ARKANSAS - Survey negative in northwest area. (Boyer). CALIFORNIA - This species and Acyrthosiphon dirhodum light on Fresno County barley plantings. (Cal. Coop. Rpt.).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - TEXAS - Ranged 100-2,000 per row foot in Wilbarger and Hardeman Counties; many controls applied. (Daniels). OKLAHOMA - Ranged 15-20 per square foot in Logan County wheat. (Okla. Coop. Sur.). WASHINGTON - First flight this spring at Yakima, Yakima County, March 7. (Landis).

HESSIAN FLY (Mayetiola destructor) - NEBRASKA - Averaged less than 1 "flaxseed" per linear row foot in wheat in Franklin, Webster, Nuckolls, Thayer, Jefferson, and Gage Counties. (Keith, Mar. 6).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Active in wheat in panhandle, northwest, and north-central counties. (Okla. Coop. Sur.). KANSAS - Increasing in some areas of Sumner County. (Simpson).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 80-250 per square foot in wheat in Tillman, Cotton, and Jackson Counties. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

LEAFHOPPERS (Cuerna spp.)- WYOMING - Large numbers on rangeland near Burns, Laramie County. (Burkhardt, Mar. 15). Present in Johnson County. (Parshall).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - MISSISSIPPI - Moderate on Oktibbeha County alfalfa. (Dinkins). ARKANSAS - No increase noted in northwest. Low, 5-6 per square foot, in vetch. (Boyer). OKLAHOMA - Light in Alfalfa and Cleveland County alfalfa; less than one per square foot of crown area in Noble County field. (Okla. Coop. Sur.). NEW MEXICO - Ranged 15-20 per 25 sweeps in alfalfa near Carlsbad, Eddy County. (Mathews). Ranged 10-25 per 50 sweeps in alfalfa in central Dona Ana County and 2-15 per 50 sweeps in Tularosa area, Otero County. (Elson). ARIZONA - Counts per 100 sweeps in alfalfa averaged 300 at Yuma, 500 in western Maricopa County. (Ariz. Coop. Sur.). CALIFORNIA - Populations variable statewide. Heavy infestations in Imperial County show increase in fungus disease and parasite activity. Pea aphid more prevalent on alfalfa last fall than in several years. (Cal. Coop. Rpt.).

ALFALFA WEEVIL (Hypera postica) - ALABAMA - Small larvae fed on Regal clover as in 1967. Medium but scattered in 30-acre field in Crenshaw County. Larvae of this or other weevils very active and heavy in burr clover in small areas of Montgomery and Escambia Counties. Lighter on crimson and white clovers in Lee, Montgomery, Escambia, Mobile, and Baldwin Counties. (Carroll et al.). MISSOURI - First and second instars light on alfalfa in Pemiscot County. (Jones). VIRGINIA - One or more newly hatched larvae infested 40 percent of developing alfalfa shoots in 5-acre field in northern Pittsylvania County. One adult per 30 sweeps, no larval damage, on newly planted alfalfa in Franklin County. (Allen). Adults active in duff of alfalfa in Augusta County field. (Pienkowski). MARYLAND - First adults of season active in alfalfa crowns in Harford, Washington, and Frederick Counties. (U. Md., Ent. Dept.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Several treatments reported on alfalfa at Yuma; control good. Counts ranged 80-490 per 100 sweeps in in untreated fields in Yuma County. Larvae averaged 140 per 100 sweeps in most Maricopa County alfalfa. (Ariz. Coop. Sur.).

ALFALFA WEEVILS (*Hypera* spp.) - CALIFORNIA - Larvae and adults medium on alfalfa at Glenn, Glenn County. *H. postica* and *H. brunneipennis* complex present in several northern counties; this area probably *H. brunneipennis*. Alfalfa grew rapidly due to weather and early first-cutting control may not be effective. Weevils occurred early, but buildups now beginning. *H. brunneipennis* becoming heavy in Imperial County. Blooming mustard complicating treatment due to attraction of honey bees. (Cal. Coop. Rpt.).

GREEN JUNE BEETLE (*Cotinis nitida*) - MISSOURI - Larvae continue active at night in established alfalfa field in Howell County. (Munson).

LYGUS BUGS (*Lygus* spp.) - NEW MEXICO - Ranged 0-7 per 50 sweeps in alfalfa in central Dona Ana County. (Elson). ARIZONA - Populations in alfalfa as of March 1 appear 2-5 times heavier than observed in previous years. Unusually heavy populations on safflower and cotton expected. Projections for July indicate populations on alfalfa in Salt River Valley will average 1,000 bugs per 100 sweeps, or 100,000 per acre. (Butler). Averaged 220 nymphs per 100 sweeps on alfalfa in Goodyear area, Maricopa County. (Ariz. Coop. Sur.).

TARNISHED PLANT BUG (*Lygus lineolaris*) - VIRGINIA - Adults averaged 10 per 100 sweeps in Pittsylvania and Franklin Counties. (Allen).

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) - ARIZONA - Light, 40 per 100 sweeps, at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Ranged 1-5 per 50 sweeps in alfalfa in central Dona Ana County. (Elson).

GREEN CLOVERWORM (*Plathypena scabra*) - ALABAMA - Late instars 1 per 5 sweeps on crimson and white clover in Mobile, Baldwin, and Escambia Counties. Lighter further north; present statewide. (Deakle et al.).

ALFALFA CATERPILLAR (*Colias eurytheme*) - NEW MEXICO - Larvae ranged 2-5 per 50 sweeps in alfalfa in central Dona Ana County. (Elson).

A LEAF ROLLER MOTH (*Platynota stultana*) - CALIFORNIA - Larvae light on alfalfa in Fresno County. Now well established north of Tehachapi Mountains; economic pest on several field crops, grapes, and strawberries. (Cal. Coop. Rpt.).

CLOVER MITE (*Bryobia praetiosa*) - ALABAMA - Heavy, 10-100 per leaf, on most crimson clover in Baldwin, Mobile, Escambia, Conecuh, and other southwest counties. Nearly all leaves heavily mottled. Damage not considered economic. (Deakle et al.).

SOYBEANS

MEXICAN BEAN BEETLE (*Epilachna varivestis*) - ALABAMA - Adults ranged 15-100 in many locations in old soybean field margins. (Knowles et al.)

MISCELLANEOUS FIELD CROPS

VARIEGATED CUTWORM (*Peridroma saucia*) - ARIZONA - Active in safflower field in Perrysville area, Maricopa County; soil very sandy and plants being cut down throughout field. (Ariz. Coop. Sur.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Moderate on bottom leaves and in whorls of 12-inch safflower in Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

LYGUS BUGS (*Lygus* spp.) - ARIZONA - Adults and nymphs averaged 50 per 100 sweeps in safflower in Buckeye area, Maricopa County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

POTATO TUBERWORM (*Phthorimaea operculella*) - ALABAMA - First-generation leaf mining light in 2 large fields of 8-inch high potatoes in Baldwin County. Late larvae light in old potatoes in 2 packing sheds in Baldwin and Escambia Counties; some in volunteer potatoes at these sheds. Other sheds in these counties and in Mobile County uninfested. Absent in 2-inch high potatoes in Mobile County. Extensive effort made to begin controls in area to prevent buildup of first generation. (Deakle et al.).

POTATO APHID (*Macrosiphum euphorbiae*) - FLORIDA - Very light on one million young tomato plants at Zuber, Marion County. (Holder, Graham). ALABAMA - Ranged 1-2 per leaf on most early potatoes in Baldwin County; no damage occurred due to very effective controls. (Coats et al.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Adults increasing on potato vines in 25-acre field at Surprise, Maricopa County. (Ariz. Coop. Sur.).

COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) - ALABAMA - Adults leaving hibernation in southwest area. (Coats et al.).

BEANS AND PEAS

MEXICAN BEAN BEETLE (*Epilachna varivestis*) - ALABAMA - Hibernating adults heavy around tree bases, brush, and other cover in Escambia and other southwest counties. (Knowles et al.).

COLE CROPS

YELLOW-MARGINED LEAF BEETLE (*Microtheca ochroloma*) - ALABAMA - Adults and larvae very heavy in large mustard bed in Escambia County home garden; bed destroyed. Larval feeding in progress during winter. Adult emergence heavy, 10-25 per small plant and 2-20 per square inch of soil when on ground. Adult feeding light on nearby collards and rape. (Knowles et al.).

CUCURBITS

MELON APHID (*Aphis gossypii*) - ARIZONA - Many adults but few colonies found in young cantaloup fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Major problem on lettuce in Yuma, Yuma County. (Ariz. Coop. Sur.).

SALT-MARSH CATERPILLAR (*Estigmene acrea*) - FLORIDA - First adults of season at lights in Gainesville March 17. (Habeck, Hetrick).

THRIPS - NEW MEXICO - Ranged 1-3 in 35 percent of onion plants in central Dona Ana County. (Elson).

BULB MITE (*Rhizoglyphus echinopus*) - CALIFORNIA - Heavy on large onion planting in Kern County; damage severe on 3 to 4-inch seedlings. Most severe damage found in spot previously planted to cowpeas. Entire planting may be lost. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

HICKORY SHUCKWORM (Laspeyresia caryana) - FLORIDA - First adult emerged in hibernation cage March 13, two days later than in 1967. (Whitcomb). ALABAMA - Full-grown larvae and pupae in pecan shucks in Baldwin, Mobile, and Escambia Counties; overwintered in area. (Deakle et al.).

FALL WEBWORM (Hyphantria cunea) - FLORIDA - First adults of season at Gainesville, Alachua County, March 17. (Habeck).

LESSER PEACH TREE BORER (Synanthedon pictipes) - MISSISSIPPI - Late larvae 2-3 per tree in 40-tree orchard in Oktibbeha County. (Dinkins).

AN APHID (Monelliopsis tuberculata) - IDAHO - Collected on black walnut foliage at Franklin and Preston, Franklin County, September 16, 1966, by G. F. Knowlton and C. F. Smith. Det. by T. L. Bissell. This is a new State record. (Knowlton).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - FLORIDA - First eggs found at Madison County, and Monticello, Jefferson County, March 6; first crawlers found March 12. (Whitcomb).

ITALIAN PEAR SCALE (Epidiaspis leperii) - CALIFORNIA - Medium locally on apple trees at Elk Grove, Sacramento County. (Cal. Coop. Rpt.).

PACIFIC SPIDER MITE (Tetranychus pacificus) - CALIFORNIA - Nymphs and adults heavy on almond trees at Modesto, Stanislaus County. (Cal. Coop. Rpt.).

CITRUS

Citrus Insect Situation in Florida - Mid-March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 73 percent of groves (norm 56 percent); 52 percent economic (norm 34 percent). Populations decreasing but still above normal and in high range. Further decrease expected to drop statewide population out of high range for first time since September 1967. Highest districts south, central, and west. TEXAS CITRUS MITE (Eutetranychus banksi) infested 33 percent of groves (norm 27 percent); 12 percent economic (norm 10 percent). Population will decrease to low level, normal for March, and hold near that level until mid-April. Highest district east. CITRUS RED MITE (Panonychus citri) infested 31 percent of groves (norm 37 percent); 11 percent economic (norm 14 percent). Will remain below normal abundance and in low range. Highest district east. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 5 percent of groves; 1 percent economic. Little change expected. GLOVER SCALE (Lepidosaphes gloverii) infested 80 percent of groves (norm 80 percent); 8 percent economic (norm 18 percent). Populations will remain subnormal and in moderate range. Highest districts east and west. PURPLE SCALE (L. beckii) infested 68 percent of groves (norm 80 percent); 2 percent economic (norm 11 percent). Population lowest on record for March. Little change expected. All districts low. CHAFF SCALE (Parlatoria pergandii) infested 41 percent of groves (norm 66 percent); 1 percent economic (norm 11 percent). Continues much below normal and in low range. Little change expected. All districts low. YELLOW SCALE (Aonidiella citrina) infested 66 percent of groves (norm 61 percent); 1 percent economic (norm 15 percent). Population will remain low and below normal. Highest district south. BLACK SCALE (Saissetia oleae) infested 39 percent of groves (norm 27 percent); 19 percent economic (norm 12 percent). Populations in low range but above normal for March. No important change expected. Highest districts central and east. An ARMORED SCALE (Unaspis citri) in 16 percent of groves; will increase. APHIDS in less than 2 percent of groves. Expected to peak in late April, 2 weeks later than normal, and be less abundant than usual. Scattered infestations will be important in Temple, tangelo, and Murcott groves and in young plantings of other varieties. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Heavy on citrus at Grover City and Oceano, San Luis Obispo County; increasing its range. Local infestations occur statewide; hosts other than citrus common. (Cal. Coop. Rpt.). ARIZONA - Controls effective on citrus at Yuma, Yuma County. (Ariz. Coop. Sur.).

SMALL FRUITS

A LEAF ROLLER MOTH (Platynota stultana) - CALIFORNIA - Larvae medium on strawberry plantings at Caruthers, Fresno County. (Cal. Coop. Rpt.).

LEAFHOPPERS (Erythroneura spp.) - ARIZONA - Moderate in vineyards in western Maricopa County; feeding damage mottled lower leaves in most cases. (Ariz. Coop. Sur.).

ORNAMENTALS

APHIDS - CALIFORNIA - Neophyllaphis podocarpi nymphs and adults heavy on podocarpus nursery stock at San Jose, Santa Clara County. Takecallis arundinariae nymphs and adults medium on bamboo plants at Sacramento, Sacramento County. (Cal. Coop. Rpt.). ARIZONA - Aphis nerii moderate on oleander terminals in plantings in Salt River Valley, Maricopa County; parasitism heavy. (Ariz. Coop. Sur.).

ARMORED SCALES - FLORIDA - Chrysomphalus dictyospermi infested stems and leaves on 210 of 300 holly plants at landscape contractor site in Gainesville, Alachua County. (Graham). ALABAMA - Fiorinia theae heavier than in most years on camellias at homes and municipal buildings throughout Mobile and Baldwin Counties. This infestation widespread and very heavy; crawlers moving about on leaves. (Deakle et al.). Lepidosaphes camelliae isolated and heavy on numerous lawn plantings; less widespread than F. theae on camellia. (McQueen). CALIFORNIA - Abgrallaspis degeneratus medium on camellia at Dairyville, Tehama County. (Cal. Coop. Rpt.).

AZALEA BARK SCALE (Eriococcus azaleae) - ALABAMA - Crawlers very heavy and moving to tops of azalea plants in areas throughout southern section where infestations occurred in previous years. Infestations especially noticeable on plants in Mobile, Baldwin, and Escambia Counties. Crawlers have not yet developed white cottony masses. This species widespread and damaging in this area of State. (Deakle et al.).

LESSER PEACH TREE BORER (Synanthedon pictipes) - ALABAMA - Constant girdling killed about half of 40 laurelcherry shrubs (5-8 feet tall) used as highway ornamentals; several others dying. First adult emergence occurred from these plantings. Pupae ranged 20-50 per plant under bark. (Knowles et al.).

SPIDER MITES (Oligonychus spp.) - ARIZONA - O. ununguis heavy on juniper and O. platani heavy on many pyracantha shrubs in Tucson, Pima County. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - First and second instars 25-100 per small tent in many wild cherry trees from gulf coast counties north through central area. (McQueen). OKLAHOMA - Second instars on native plum trees in Major and Payne Counties. (Okla. Coop. Sur.).

SPRING CANKERWORM (Paleacrita vernata) - NEBRASKA - Males abundant at lights in Lincoln, Lancaster County. (Keith). WISCONSIN - Males flying at windows on warm evenings. (Wis. Ins. Sur.).

NOCTUID MOTHS - WISCONSIN - *Lithophane laticinerea* and *Eupsilia morrisoni* appearing in blacklight trap at Madison (Wis. Ins. Sur.).

WHITE-MARKED TUSSOCK MOTH (*Hemerocampa leucostigma*) - NEBRASKA - Egg masses common on deciduous trees in and around Lincoln, Lancaster County. Some defoliation possible. (Keith).

EUROPEAN ELM SCALE (*Gossyparia spuria*) - MARYLAND - Medium, but increasing on several large American elms in Takoma Park, Montgomery County. (U. Md., Ent. Dept.).

A BARK BEETLE (*Orthotomicus caelatus*) - DELAWARE - Adult collected in blacklight trap in Dover, Kent County, July 13, 1966, by J. Franklin. Det. by D.M. Anderson. This is a new State record. (Burbutis). Occurs in eastern Canada and in the United States as far south as Florida. Breeds in all species of pine and in spruce, larch, and fir. This bark beetle is an important secondary invader, often attacking weakened trees. With other bark beetles, often attacks and kills apparently healthy trees. (PPC).

A CONIFER SAWFLY (*Neodiprion taedae linearis*) - ARKANSAS - No egg hatch observed in southern area week of March 11. Hatch well underway in mid-March 1967. Probably due to cool weather in 1968. (Warren).

A XYELID SAWFLY (*Xyela radiatae*) - CALIFORNIA - Larvae heavy on cones of Monterey pine at Oakland, Alameda County; larvae developed in staminate cones. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. March 17-23, 1968. Total of 87 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 7, Sonora 54, Chihuahua 4, Coahuila 2, Nuevo Leon 1, Tamaulipas 19. Total of 7 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 136,820,000. (Anim. Health Div.).

CATTLE GRUBS (*Hypoderma* spp.)- IOWA - Averaged 17 grubs per back on 6 cattle checked in Polk County feedlot. Cattle from out-of-State. (Iowa Ins. Sur.).

FACE FLY (*Musca autumnalis*) - MINNESOTA - Nuisance in homes scattered throughout State. (Minn Ins. Rpt., Mar. 15). NEVADA - Controls necessary in dairies in Clark County. (Adams).

HORN FLY (*Haematobia irritans*) - OKLAHOMA - Ranged 5-15 per head on mature beef cattle in Major County. First appearance in 1968. (Okla. Coop. Sur.).

STABLE FLY (*Stomoxys calcitrans*) - NEBRASKA - Adults active on sunny days during March around farm buildings south of Lincoln, Lancaster County. Earliest recorded in State. (Campbell et al.). NEVADA - Controls necessary in dairies in Clark County. (Adams).

SHEEP KED (*Melophagus ovinus*) - NEBRASKA - Adults ranged 10-500, averaged about 150, per head on shorn lambs at farm south of Lincoln, Lancaster County. (Cambell et al., Mar. 8). WYOMING - Problem on sheep in Hot Springs County. (Parshall).

A LOUSE FLY (*Lipoptena mazamae*) - OKLAHOMA - Active on deer in Cherokee County. (Okla. Coop. Sur.).

LONG-NOSED CATTLE LOUSE (Linognathus vituli) - OKLAHOMA - This species and Haematopinus eurysternus heavy on cattle in Mayes and Cotton Counties; moderate in Cleveland County. (Okla. Coop. Sur.).

HARD-BACKED TICKS - OKLAHOMA - Amblyomma americanum light to moderate on deer and cattle in Cherokee County; light and annoying man in Mayes County. Activity of Dermacentor albipictus and Ixodes scapularis decreased in State. (Okla. Coop. Sur.). CALIFORNIA - Dermacentor occidentalis adults on clothing at ranch near Santa Ysabel, San Diego County. Appearance of ticks this early may indicate heavy populations similar to 3 years ago. (Cal. Coop. Rpt.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ALABAMA - Additional specimen collected in home at Town Creek, Lawrence County. (Baswell, Lovelady).

HOUSEHOLDS AND STRUCTURES

PAVEMENT ANT (Tetramorium caespitum) - MICHIGAN - Winged and wingless forms active over wide areas of southern Lower Peninsula. (Janes).

BROWN-BANDED COCKROACH (Supella supellectilium) - WYOMING - Infested house at Riverton, Fremont County. Generally scarce in State. (Burkhardt, Mar. 15).

SMOKY-BROWN COCKROACH (Periplaneta fuliginosa) - TEXAS - Infested basement of building in Crockett, Houston County. (Hamman, Mar. 15).

SOUTHERN LYCTUS BEETLE (Lyctus planicollis) - NEVADA - Numbers and damage heavy in hardwood floors of home at Carson City, Ormsby County, Floors removed and replaced. (Geister, Gustafson).

SUBTERRANEAN TERMITES - MICHIGAN - Alates observed at several locations in Grand Rapids. (Janes). DELAWARE - Reticulitermes sp. spring flights numerous throughout State. (Burbutis). MARYLAND - Reticulitermes flavipes swarms increasing in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.).

STORED PRODUCTS

LESSER GRAIN BORER (Rhyzopertha dominica) - TEXAS - Infested stored rice near Wadsworth, Matagorda County. (Vestal, Mar. 15).

BENEFICIAL INSECTS

LADY BEETLES - MINNESOTA - Active and more numerous this spring; probably due to higher aphid populations last fall. (Minn Ins. Rpt., Mar. 15).

DAMSEL BUGS - NEW MEXICO - Ranged 4-6 per 25 sweeps in alfalfa near Carlsbad, Eddy County (Mathews); 0-3 per 50 sweeps in alfalfa in central Dona Ana County (Elson). MISSISSIPPI - Nabis spp. active, 6-8 per 1,000 linear feet, in some alfalfa in east-central area. (Dinkins).

BIG-EYED BUGS (Geocoris spp.) - MISSISSIPPI - Active, 20-30 per 1,000 linear feet, on some wheat and alfalfa in east-central area. (Dinkins).

LACEWINGS - NEW MEXICO - Ranged 0-2 per 25 sweeps in alfalfa near Carlsbad, Eddy County. (Mathews).

HONEY BEE (Apis mellifera) - WISCONSIN - Active on warm days; may be searching for food. (Wis. Ins. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GYPSY MOTH (*Porthetria dispar*) - NEW JERSEY - Additional egg clusters found at sites in Camden, Burlington, Hunterdon, and Mercer Counties. PENNSYLVANIA - Total of 52 egg cluster infestation sites found by end of February in Berks, Bucks, Monroe, Northampton, and Pike Counties. (PPC East. Reg.).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - FLORIDA - Total of 97,900 acres in Polk County and 13,300 acres in Osceola County surveyed to delimit Tampa eradication area. GEORGIA - Found in McIntosh County for a new county record. MISSISSIPPI - Total of 190,000 acres surveyed in 18 counties with no significant finds; mound treatments continue in Covington, Jefferson Davis, and Pike Counties. TEXAS - Collected for first time in Panola County. (PPC South. Reg., Feb. Rpt.). Damaging pastureland in Harris County and present on pastureland in Montgomery County. (Straughan, Mar. 15).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - GEORGIA - Collected in Decatur County in December for a new county record. MISSISSIPPI - Extensions found during February in Covington, Jones, and Jefferson Davis Counties. (PPC South. Reg.).

PINK BOLLWORM (*Pectinophora gossypiella*) - TEXAS - Boll infestations 40 percent in Callahan County, 20 percent in Shackelford County, and 56 percent in Stephens County; 3 live larvae found out of 58 recovered during dry boll inspection. (PPC South. Reg., Feb. Rpt.). NEVADA - All cotton stalks plowed under by February 15 deadline. ARIZONA - Larvae heavy in most cotton-growing areas indicated by lint cleaner and cottonfield debris inspections. Over 3,500 acres of stalks remain to be plowed up in State. NEW MEXICO - Over 50 percent of fields plowed under by end of February; overwintering larval survival as high as 6 percent in cotton on stalks. (PPC West. Reg.).

Weather of the week continued from page 232.

eastward. Memphis, Tennessee, measured a foot of snow on the ground Friday morning. Eight inches covered the ground at Clarksdale, Mississippi, and power lines carried heavy loads of ice and snow. Snow accumulated to 8 to 12 inches over much of the western three-fourths of Kentucky, 4 to 10 inches in western Ohio, and 1 to 10 inches in New England. Warm temperatures on the 23rd and 24th melted most of the snow in this heavy snowfall area. Practically no rain fell over the intermountain region between the Cascades and Sierras and the Rocky Mountains and, except in spots, precipitation totaled generally less than an inch northwest of a line from El Paso, Texas, to Detroit, Michigan. The main exceptions were the coastal portions of Washington and Oregon and a small area in northeastern South Dakota. Aberdeen, South Dakota, received a combination of rain, snow, sleet, and hail which totaled 2 2/3 inches. A large area extending from northeastern Texas to southern Ohio received 2 to 3.5 inches of precipitation during the week.

TEMPERATURE: The west and east coasts were sunny and mild most of the week. The mercury climbed to the middle 80's in the Atlantic Coastal States as far north as Virginia on several days, reaching 90° at Richmond, Virginia, on Thursday. The middle portions of the Nation were much cooler, rising only to the 30's or 40's on most afternoons. St. Louis' maximum on Thursday was 32°. Freezing temperatures penetrated deep into Texas on several mornings. New Orleans, Louisiana, Mobile, Alabama, and Tallahassee, Florida, registered 32° or colder on Sunday morning, March 24. Temperatures averaged above normal along the Pacific coast, over the northern Rockies, and from the Red River of the North to New England and southward to the Carolinas. Much of Virginia averaged 10° warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

HAWAII INSECT REPORT

Turf, Pasture - A GRASS WEBWORM (Herpetogramma licarsisalis) found for first time on Molokai Island. Adults heavy on Bermuda grass and nutgrass at Mapulehu; light on Bermuda grass and other grasses at Kaunakakai and vicinity. Larval damage trace to light from Loloa to Kapaa on Kauai, light to heavy throughout Oahu, medium to heavy at Kipahulu on Maui. Adults light on grasses at Hilo, Hawaii Island. (Mitchell, Funasaki).

General Vegetables - DIAMONDBACK MOTH (Plutella xylostella) larvae and adults severe in 1.25 acres of cabbage in Omaopio, Maui, at 1,200 feet elevation; light to medium on cabbage in Kula at 3,000 feet. (Takashita). IMPORTED CABBAGEWORM (Pieris rapae) adults medium, eggs heavy in acre of cabbage in upper Omaopio, Maui, at 2,400 feet elevation; adults medium on cabbage in upper Kula at 3,500 feet. (Ah Sam). TURNIP APHID (Hyadaphis pseudobrassicae) severe on 75 percent of young daikon in small commercial planting at Honolulu, Oahu; very light on 1.25 acres of daikon at Koko Head and Waimanalo. (Funasaki). BEET ARMYWORM (Spodoptera exigua) eggs and larvae increasing lightly in some green onions at Koko Head and Waimanalo on Oahu. Egg clusters 2 per plant; one or more larvae damaging 3 leaves per plant. (Funasaki).

Ornamentals - SOUTHERN GREEN STINK BUG (Nezara viridula) averaged 2 egg clusters and 2-3 nymphs per plant on Philippine violet (Barleria cristata) at Pearl Harbor, Oahu. (Kajiwara).

Beneficial Insects - LANTANA DEFOLIATOR CATERPILLAR (Hypena strigata), a NOCTUID MOTH (Catabena esula), and LANTANA LACE BUG (Teleonemia scrupulosa) caused 100 percent defoliation of hundreds of lantana plants at Halepiula, Hawaii Island. (Yoshioka). SOURBUSH SEED FLY (Acinia picturata) infested 92 percent of floral heads of Pluchea odorata at Kihei, Maui; 81 percent at Kahului. (Ah Sam).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) very active in wild weed areas in several parts of Maui and Oahu due to recent heavy rains. Large numbers migrated into residential areas at Hawaii Kai, Oahu. (Tamura, Nakao).

CORRECTIONS

CEIR 18(12):208 - Screw-worm (Cochliomyia hominivorax) - "No cases........March 6-10, 1968" should read "No cases.....March 10-16, 1968."

CEIR 18(12):224 - Change N. cavicola in Oklahoma to Eutombicula spp.

INSECT DETECTION

New State Records

An APHID (*Monelliopsis tuberculata*) - IDAHO - Collected on black walnut foliage at *Franklin and Preston, Franklin County*, September 16, 1966, by G. F. Knowlton and C. F. Smith. Det. by T. L. Bissell. (p. 237).

A BARK BEETLE (*Orthotomicus caelatus*) - DELAWARE - Adult collected in blacklight trap in Dover, *Kent County, July 13*, 1966, by J. Franklin. Det. by D. M. Anderson. (p. 239).

An ARMORED SCALE (*Fiorinia externa*) - RHODE ISLAND - Collected from hemlock at Newport, Newport *County, March 1967*. (p. 250).

New County and Island Records

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - GEORGIA - McIntosh County. TEXAS - Panola *County. (p. 241)*.

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - GEORGIA - Decatur County. (p. 241).

A GRASS WEBWORM (*Herpetogramma licarsisalis*) - HAWAII - Molokai Island. (p. 242).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 3/18-21, BL - Armyworm (*Pseudaletia unipuncta*) 5, black cutworm (*Agrotis ipsilon*) 3, granulate cutworm (*Feltia subterranea*) 13, cabbage looper (*Trichoplusia ni*) 2. Sanford 3/11, 12, 15, BL - Armyworm 2, black cutworm 1, granulate cutworm 39. TEXAS - Brownsville - 3/9-15, 2BL, 35-80° F., trace precip. - Armyworm 68, black cutworm 121, cabbage looper 4, fall armyworm (*Spodoptera frugiperda*) 1, granulate cutworm 25, salt-marsh caterpillar (*Estigmene acrea*) 7, variegated cutworm (*Peridroma saucia*) 46; 3/16-22, 2BL, 37-83° F., precip. 0.22 - Armyworm 134, black cutworm 52, cabbage looper 7, granulate cutworm 21, salt-marsh caterpillar 26, tomato hornworm (*Manduca quinquemaculata*) 2, variegated cutworm 60. Waco - 3/16-22, BL - Armyworm 371, black cutworm 4, cabbage looper 2, variegated cutworm 172, yellow-striped armyworm (*Prodenia ornithogalli*) 29.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1967

(continued from page 230)

SHADE TREES

Highlights:

MIMOSA WEBWORM was again the major pest of mimosa trees in Alabama while WESTERN TENT CATERPILLAR caused severe defoliation of various shade trees in Washington. FOREST TENT CATERPILLAR increased greatly in Michigan as several thousand acres of beech, maple, and aspen were defoliated in Charlevoix and Antrim Counties. FALL WEBWORM completely defoliated poplar trees in some areas of Chaves, Eddy, Dona Ana, and Sierra Counties, New Mexico. FRUIT-TREE LEAF ROLLER caused heavy defoliation of forest and shade trees in central and northern New Jersey. GREEN-STRIPED MAPLEWORM and SADDLED PROMINENT defoliated several thousand acres of mainly ash and maple trees in Sullivan County, Pennsylvania, and RED-HUMPED CATERPILLAR was the heaviest ever on shade trees in California. ELM LEAF BEETLE defoliation of shade trees ranged heavy to severe in most States reporting. LOCUST LEAF MINER severely browned black locust foliage in central and southern Maryland and caused widespread browning in west-central Virginia in July and August. Several APHIDS were heavy on maple and hemlock in Virginia, Washington, and Arkansas and ELM LEAF APHID was severe on 1,500 trees in 4 counties in Utah. PINE TORTOISE SCALE became a serious problem on mugho pine in the Brainerd area of Minnesota and EUROPEAN ELM SCALE caused a problem on American elms in Santa Fe and San Juan Counties, New Mexico. OYSTERSHELL SCALE damaged hundreds of shade trees throughout Utah. BIRCH LEAF MINER was a serious problem on shade and ornamental birches in Maine and was heavy on ornamental birch throughout Vermont.

MIMOSA WEBWORM (Homadaula anisocentra*) larvae were heavy in central and southern NEW JERSEY and were first observed on mimosa in Kent and Sussex Counties, DELAWARE, in late June. Mimosa webworm heavily infested mimosa in southern MARYLAND, and again became the major pest to mimosa trees throughout ALABAMA. In OHIO the first larvae of the season were observed on May 25. Larvae and webbing began to occur on honeylocust in the central section in early July. Some infestations ranged moderate to heavy in the eastern section and first-generation larvae were nearly full grown by mid-July. Adults were very common and laying eggs for the second larval brood by the second week of August. Defoliation occurred throughout mid-August in Ohio. Mimosa webworm was present in 7 counties of 3 different regions in IOWA, but a statewide survey had not been conducted. Damage was quite severe on honeylocust wherever this species was present. Populations and damage were heavy on untreated mimosa and honeylocust in central and southern MISSOURI and an infestation was heavy on albizzia trees in Chico in Butte County, CALIFORNIA. This was the only occurrence in the State in 1967.

TENT CATERPILLARS (Malacosoma spp.) were light throughout NEW JERSEY but were quite damaging to oak in many areas of CALIFORNIA. A TENT CATERPILLAR (M. incurvum discoloratum) heavily infested poplar in Clark County, NEVADA, in April and required controls. Defoliation by another TENT CATERPILLAR (Malacosoma sp.) ranged moderate to heavy in scattered red alder stands in the Coast Range from the Columbia River southward to the Coquille River in OREGON. WESTERN TENT CATERPILLAR (M. pluviale) caused severe defoliation of alder, willow, and orchard trees in WASHINGTON. This species was heavier than in former years in Island County in June. GREAT BASIN TENT CATERPILLAR (M. fragile) defoliated some cottonwood trees and removed 10-75 percent of the foliage from others along the Virgin River in Washington County, UTAH. Damage was moderate at Moab, Grand County;

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* Clarke, J.F.G. 1968. Ent. Soc. Amer. Ann. 61(1):228-229.

Bluff, San Juan County; and elsewhere along the streams in the southern area. Malacosoma fragile caused moderate to conspicuous damage to trees in Logan Canyon, Cache County, and in the mountains west of Garden City, Rich County. This species was also present in COLORADO in 1967.

EASTERN TENT CATERPILLAR (M. americanum) egg masses began hatching on May 21 in Hancock County, MAINE; about 2 weeks later than in the central areas. Infestations were light in several areas by early June and damage ranged light to moderate in mid-June. This species was generally at or below normal levels. Egg hatch began April 24 in RHODE ISLAND, but numbers were relatively inconspicuous. Egg hatch began in late March and early April in VIRGINIA and tents were very evident on wild cherry throughout the State. In OHIO egg hatch began and larval feeding occurred on wild cherry foliage in the southern area by early April. Populations and webbing increased on wild cherry and apple foliage throughout May. The first cocoon of the season occurred by mid-May in the southwestern area and pupation was well underway by late May. In early June the first adults were collected in blacklight traps in central Ohio. Night flights continued until the end of the first week of July. Larvae developed very rapidly in the southern area due to the early warm temperatures, and heavy larval populations consumed most of the wild cherry foliage throughout much of the southern third of the State. By early May many larvae were nearly full grown in the southern counties. Some migration had begun by this time where complete defoliation had occurred. Mass migration in southern areas did not begin until about mid-May. Webbing and larval activity occurred further north this year than in 1966. A decline in the eastern tent caterpillar populations in the southeastern area was indicated by the few cocoons found in the heavily infested trees, heavy parasitism, and the few adults taken in light traps in Washington County. Thirty-four specimens of an ICHNEUMON WASP (Itoplectis conquisitor) were reared from 60 M. americanum pupae collected in Morgan County. M. americanum was light in some areas of the southwestern section, and infestations may be lighter in many areas of southern Ohio in 1968. In INDIANA egg hatch began in the Ohio River area in early April. By April 14, small webs occurred on wild cherry throughout the southern half of the State. Webs ranged 1-15 per tree (average 4) on wild cherry and abandoned fruit trees in the central, east-central, southeastern, and south-central districts during late April and early May. Larvae defoliated wild cherry and migrated to cultivated shrubs and ornamentals in the southern districts. M. americanum appeared earlier than usual in mid-February in northwest ARKANSAS and caused occasional damage in OKLAHOMA.

FOREST TENT CATERPILLAR (M. disstria) larvae were light and mixed with Stilpnotia salicis in the Wilton, Temple, Farmington area of MAINE. M. disstria was also locally heavy on poplars in Auburn in mid-July. Forest tent caterpillar decreased to a lower level than in 1966 in VERMONT as no defoliation was reported. This species was common but not economically serious in the Warwick area of RHODE ISLAND. M. disstria was one of the 2 species primarily responsible for defoliation of live oak and turkey oak during April in Marion, Sumter, Citrus, Hernando, and Pasco Counties, FLORIDA. Larvae increased greatly following 6 years of minor fluctuations in MICHIGAN. M. disstria defoliated several thousand acres of beech, maple, and aspen forest in Charlevoix and Antrim Counties during June and lesser numbers were present in other hardwood stands of northern Lower Michigan. Increased numbers and problems in resort areas are predicted for 1968. The tourist trade was adversely affected due to the outbreaks in past years. In MINNESOTA the defoliated area spread very little in 1967 compared with 1966. This area extended from a point 10 miles west of International Falls to the western Cook County line and as far south as Orr. Light defoliation occurred at Virginia and Eveleth. Egg mass and aerial defoliation surveys indicate that there will be a slight southeastern spread to a point south of the Iron Range cities of Virginia and Hibbing, and to a point north of Duluth in 1968. Forest tent caterpillar was present in COLORADO in 1967 and defoliated trees in 24 counties in MONTANA.

SYCAMORE TUSSOCK MOTH (*Halisidota harrisii*) caused extensive damage in Atlantic and Cape May Counties, NEW JERSEY. FALL WEBWORM (*Hyphantria cunea*) was scattered, light, and of short duration in RHODE ISLAND in 1967. Larvae were first observed in central OHIO in late June, and larvae and webbing remained relatively scarce until early August. During August defoliation and webbing were common on a variety of deciduous trees throughout Ohio, and most severely infested wild cherry. In ARKANSAS the red-headed strain appeared earlier than normal in the northeast area in early May. The black-headed strain was generally light in the southern area, but became heavy on pecan in the southeast in September. Fall webworm was heavy and completely defoliated poplar trees in many areas of Chaves, Eddy, Dona Ana, and Sierra Counties, NEW MEXICO. This species was a problem on fruit and shade trees in San Juan County. Infestations on poplars along the Rio Grande River in Rio Arriba County apparently were lighter in 1967 than in 1966 and caused moderate damage to native cottonwood and willow at Bandelier National Monument. FRUIT-TREE LEAF ROLLER (*Archips argyrospilus*) caused heavy defoliation of forest and shade trees in central and northern NEW JERSEY. Fruit-tree leaf roller was present in COLORADO in 1967 and infested many oak trees in CALIFORNIA.

SATIN MOTH (*Stilpnotia salicis*) was widespread and caused generally moderate to heavy damage mostly to poplars in Pittsfield, Portland, South Portland, Corinna, Skowhegan, Smithfield, Unity, Dover, West Athens, South Paris, Leeds, and numerous other locations in MAINE. Larval development was complete and pupation was underway by mid-July. Satin moth defoliated widely scattered poplars in VERMONT. WHITE-MARKED TUSSOCK MOTH (*Hemerocampa leucostigma*) was one of the 2 species primarily responsible for defoliation of live oak and turkey oak during April in Marion, Sumter, Citrus, Hernando, and Pasco Counties, FLORIDA. BUCK MOTH (*Hemileuca maia*) caused widespread defoliation of turkey oak 10 miles southwest of Ocala, Marion County, and southward during late April in the State. ORANGE-STRIPED OAKWORM (*Anisota senatoria*) was very heavy in Atlantic, Cape May, and Ocean Counties, NEW JERSEY. This species increased over the 1966 level. GREEN-STRIPED MAPLEWORM (*A. rubicunda*) and SADDLED PROMINENT (*Heterocampa guttivitta*) defoliated several thousand acres of mainly ash and maple trees in Sullivan County, PENNSYLVANIA. GREGARIOUS OAK LEAF MINER (*Cameraria cincinnatiella*) infested almost every white oak tree in the State. Infestations varied, but generally over 50 percent of the leaves were mined.

CANKERWORMS heavily defoliated forest and shade trees in central and northern NEW JERSEY. FALL CANKERWORM (*Alsophila pometaria*) was not as destructive in north-central PENNSYLVANIA, but more defoliation occurred in 1967 than in 1966 in the Scranton and Pocono Mountain areas. Fall cankerworm and SPRING CANKERWORM (*Paleacrita vernata*) were light in the Fargo area, NORTH DAKOTA, but *A. pometaria* was more numerous than spring cankerworm. Egg masses were evident on trees, buildings, and tanglefoot bands in the Fargo area. Populations and damage of both species are expected to increase in 1968. A LEAF BLOTCH MINER (*Lithocolletis arbutusella*) was severe on madrone in Mendocino County, CALIFORNIA.

YELLOW-NECKED CATERPILLAR (*Datana ministra*) infestations and damage were heavy on ornamentals along Interstate Highway 95 in the Brunswick area of MAINE in early September, and EUROPEAN PINE SHOOT MOTH (*Rhyacionia buoliana*) caused damage to mugho pine in Portland in August. DOGWOOD BORER (*Thamnosphecia scitula*) caused less damage than normal in RHODE ISLAND, and BAGWORM (*Thyridopteryx ephemeraeformis*) infestations apparently decreased from those in 1966 in DELAWARE. Bagworm was normal on evergreens but heavier on deciduous trees in May in northeast ARKANSAS. The first adults of an OLETHREUTID MOTH (*Eucosma gloriola*) were collected May 2 in a blacklight trap in Newaygo County, MICHIGAN. Larval damage was common on Christmas tree plantations in western Lower Michigan by mid-June. CARPENTERWORM (*Prionoxystus robiniae*) was a destructive pest of many deciduous trees in McCone, Garfield, Fallon, Hill, and Prairie Counties, MONTANA, and may have caused much undetermined tree damage in other counties. A NOCTUID MOTH (*Oncocnemis punctilinea*) caused moderate damage to ash in Clark County, NEVADA, in April and in Washoe County in June, while RED-HUMPED CATERPILLAR (*Schizura concinna*) infestations on shade trees were the heaviest ever in CALIFORNIA.

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) defoliation ranged moderate to severe on elms in Portland, MAINE, and on elms and locust in Skowhegan in mid-July. Infestations were local and of minor importance in RHODE ISLAND in mid-June. Larvae caused partial defoliation to thousands of willow trees in northeastern PENNSYLVANIA as numbers were so heavy in Sullivan, Wyoming, and Luzerne Counties that shade trees were sprayed to prevent complete defoliation. Larval damage to elm and willow foliage was scattered in UTAH this season. N. antiopa was as heavy as in 1966 on elm throughout NEVADA with most damage occurring in midsummer. Infestations on elm and willow were common in many locations of CALIFORNIA.

ELM LEAF BEETLE (Pyrrhalta luteola) adults migrated from homes in the Lewiston and Auburn area of MAINE in mid-May. Activity was light in York County in late June, but substantial feeding damage was evident in the greater Portland area in mid-July. Infestations were evident on elms at Burlington, St. Johnsbury, Barre, St. Albans, and Rutland, VERMONT, and were spotty but normal in RHODE ISLAND. Elm leaf beetle defoliation ranged moderate to heavy on elms in central and eastern PENNSYLVANIA and severely infested certain sections of DELAWARE. This species caused heavy foliage damage to American and Chinese elms throughout MARYLAND, and adults entered homes in several counties over the State during the spring. Elm leaf beetle continued to defoliate and cause serious damage to elms on lawn and street plantings from central to northern ALABAMA and was heavy in southeast and northwest ARKANSAS by late June. Adults began to appear early in April in the Childress and Wichita Falls area of TEXAS and increased significantly throughout its known range in the State.

Elm leaf beetle was serious throughout most of OKLAHOMA again in 1967. Adults became active in early April and 3 generations fed on elm throughout the summer. P. luteola defoliation of elms was again common throughout most of MISSOURI. In KANSAS infestations were more extensive and more widely destributed throughout the State in 1967. This species caused severe leaf skeletonization on Siberian elms and "hybrid" elms by mid-June in many areas. More concern was shown over the adults hibernating in homes than the defoliation on elms. Infestations were heavy on elms in the south, southeast, and central districts of NEBRASKA and increased in all areas of COLORADO. Most cities are following a control program in Colorado. In NEW MEXICO, elm leaf beetle was probably the most troublesome insect pest in Albuquerque due to its widespread distribution. Severe defoliation occurred on Siberian elms in Bernalillo, Valencia, Rio Arriba, San Juan, and Grant Counties. This species was found in Sierra, Otero, Eddy, Chaves, Torrance, and McKinley Counties for the first time in 1967. Populations were heavy on elms in Pinal, Maricopa, Pima, Apache, and Mohave Counties, ARIZONA, from late June to mid-November. In UTAH infestations were extremely abundant and troublesome at Kanab, Kane County, where controls were applied to 1,500 trees. Numbers were heavy in the Green River area, Emery County; Salt Lake City, Salt Lake County; Fillmore, Millard County; and throughout Weber County. P. luteola was also serious in several other localities and areas, and damage was more general than normal at Logan and nearby communities in Utah. This species heavily infested host trees throughout most of its range in NEVADA where damage in various peripheral areas was greater than in past years. Elm leaf beetle damage was extensive throughout OREGON where populations in most areas were heavier than in 1966. Populations were very damaging and remained well into the fall in CALIFORNIA.

IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) caused some defoliation and some leaf drop on ornamental willows in the greater Portland area of MAINE by mid-August and was heavy and more numerous throughout NEW JERSEY than in 1966. LOCUST LEAF MINER (Xenochalepus dorsalis) was heavy and severely browned black locust foliage in central and southern MARYLAND. Locust leaf miner caused widespread browning of locust in west-central VIRGINIA in July and August. In OHIO, adults, eggs, and larvae were present on the foliage of black locust in eastern and southern areas by late June. Leaf mining by larvae caused less damage than that done by adults. Adults commonly browned black locust trees by skeletonizing up to 90+ percent of the leaves in forested areas of eastern and southern Ohio. A LEAF BEETLE (Systena marginalis) was heavy and caused much brick-red "flagging" of leaves in north-central FLORIDA during late June and July. Larvae of COTTONWOOD LEAF BEETLES (Chrysomela scripta complex) lightly damaged cottonwood trees at Bismarck and Taylor, NORTH DAKOTA. In MONTANA large areas were infested along the Yellowstone, Missouri, Powder, Milk, and Musselshell Rivers as well as in towns not close to the large rivers. Cottonwood leaf beetles were present in COLORADO in 1967. ALDER FLEA BEETLE (Altica ambiens) damage ranged moderate to heavy on alder in the Whitewater Canyon Recreation Area near Glenwood, NEW MEXICO. This is the first time that this species has been observed in this area.

BRONZE BIRCH BORER (Agrilus anxius) damage was common on ornamental white and some gray birch around homes in Chittenden County, VERMONT. BROAD-NECKED ROOT BORER (Prionus laticollis) larvae were responsible for the death of mountain-ash in Cranston in Providence County, RHODE ISLAND. General adult emergence was delayed by several weeks compared with the past several years. TWIG PRUNER (Elaphidionoides villosus) was relatively inconspicuous for the second successive year in Rhode Island. TWIG GIRDLER (Oncideres cingulata) was active but lighter than usual in ARKANSAS in November, and damaged elm and hickory trees in central, north-central, east-central, northwest, and southeast OKLAHOMA from mid-October to mid-November. ELM BORER (Saperda tridentata) was heavy on elm at Walhalla, NORTH DAKOTA, and a LONG-HORNED BEETLE (Neoclytus caprea) infested ash in Clark County, NEVADA, for a new State record.

A BARK BEETLE (Xylosandrus compactus) became quite prevalent in most of the FLORIDA Peninsula and apparently is extending its range northward to the State line. A wide variety of trees such as red bay, redbud, camphor, wild cherry, magnolia, loquat, oak, and especially dogwood were infested in the Gainesville area. A fungus carried by this species was the causal agent for stem kill. NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) adults were collected in window traps in Sargent, Dickey, McIntosh, La Moure, and Traill Counties for new county records in NORTH DAKOTA. SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) populations remain in the southeast quarter of MINNESOTA. In IOWA larvae were still present in Fremont, Guthrie, Mahaska, Page, and Polk Counties during a survey in early April. On April 13, larvae in elm bark collected at Ames, Story County, and held at room temperature since March 28, showed 10 percent pupation of the specimens with 320 day-degrees above 50°F. Specimens from Oskaloosa, Mahaska County, were placed in outdoor emergence cages and showed no pupation by April 13. On May 5, pupation was nearly completed in the southern and central areas with low numbers of inactive adults present in the emergence traps. Emergence began in cages at Dubuque on May 23 and continued until May 28. On May 13, adults were collected from tanglefoot traps in an elm tree at Shenandoah in Page County, Iowa. In NEBRASKA, adults, full-grown larvae, and pupae were present in infested trees in Lancaster County on April 21, and adult emergence occurred about 3 weeks earlier than in 1966. To date, Dutch elm disease has been detected in 60 counties that are confined mostly to the northeast, east, south, southeast, central, and southwest districts. S. multistriatus adults emerged in early April, mid-June, and early August in OKLAHOMA with a partial fourth generation emerging in mid-October. This species infested Bonneville and Latah Counties, IDAHO, for new county records in 1967. The Dutch elm disease fungus was cultured from 3 widely separated trees in Boise during the fall in the State. S. multistriatus increased in CALIFORNIA in 1967.

WILLOW FLEA WEEVIL (Rhynchaenus rufipes) ranged moderate to heavy and caused feeding injury on ornamental and wild willows in many areas of MAINE by mid-August. The situation was apparently more severe in central and southern areas. A LEAF-MINING WEEVIL (Odontopus calceatus) fed heavily on the leaves of tuliptree and magnolia in the Pittsburgh area, PENNSYLVANIA. In many cases the leaf damage was so severe that premature leaf drop occurred. Some very light feeding was evident as far east as Centre. Tuliptree was preferred to magnolia as hosts on the fringe of the heavily infested area in Pennsylvania. O. calceatus damaged foliage of tuliptree near Cumberland in Allegany County, MARYLAND, and caused damage to tuliptree in scattered areas throughout VIRGINIA during June. In OHIO adults were active and eating the buds and unfolded foliage of tuliptree by the third week of April. By the first week of June egg hatch was well underway and early instars had just begun to mine the leaves. Feeding damage by adults of the previous generation became conspicuous at that time. Many new generation adults began dispersing or migrating in early July. Larval feeding generally did not cause severe damage to tuliptree in 1967, but heavy adult infestations caused extensive damage to tuliptree foliage in widespread areas of Ohio where adult survival was high. The range of this species extends to Stark, Medina, and Summit Counties. ASIATIC OAK WEEVIL (*Cyrtepistomus castaneus*) was collected from oak in Warwick, Kent County, August 9, 1967, for a new State record for RHODE ISLAND. Asiatic oak weevil was restricted to the southern quarter of INDIANA where adults annoyed homeowners more in 1967 than in 1966. This species was found in one southern and 5 central counties for new county records in MISSOURI for 1967. POPLAR-AND-WILLOW BORER (*Sternochetus lapathi*) caused severe damage to willow in East Greenwich in Kent County, Rhode Island, and damaged many native willows along the Little Bitterroot drainage in Lewis and Clark County, MONTANA. Less damage was caused along the Clark Fork River in the Butte and Deer Lodge area of Montana.

GIANT BARK APHID (*Longistigma caryae*) was very heavy on oak during the fall in central and northern NEW JERSEY and was more active than usual, with heavy oviposition, in October and November in ARKANSAS. Giant bark aphid was of minor importance on oak in OKLAHOMA while much oviposition occurred on pin oaks in Lancaster County, NEBRASKA. This species was still present on December 20 in Nebraska. EASTERN SPRUCE GALL APHID (*Adelges abietis*) was very common and easily found on ornamental spruces in the Portland area, MAINE. Eastern spruce gall aphid and COOLEY SPRUCE GALL APHID (*A. cooleyi*) were widespread wherever hosts were grown in RHODE ISLAND, being more severe on ornamentals than on woodland trees. An APHID (*A. tsugae*) was numerous on hemlock in the early summer in the Richmond area, VIRGINIA, while nymphs severely damaged ornamental hemlock at Washougal in Clark County, WASHINGTON. Another APHID (*Drepanaphis carolinensis*) caused severe defoliation to maple trees in Montgomery County, Virginia, in September and PAINTED MAPLE APHID (*D. acerifoliae*) was heavy on maple in northwest ARKANSAS in October.

ELM LEAF APHID (*Myzocallis ulmifolii*) was generally abundant with honeydew evident in many areas of MAINE in late July. Foliage on some trees was completely smutted in the southern area. Infestations were widespread in many areas of NORTH DAKOTA and were the most promounced and persistant in several years. This aphid was severe on 1,500 trees at Kanab, Kane County; Logan, Cache County; Ogden, Weber County; Salt Lake City, Salt Lake County; and Provo, Utah County, UTAH. NORWAY-MAPLE APHID (*Periphyllus lyropictus*) was a serious pest in many localities of Utah in the spring. An APHID (*Lachnus salignus*) was heavy on 1,000 5 to 10-foot ponderosa pines in a shelterbelt planting near Aberdeen, SOUTH DAKOTA, in early July and controls were applied. *L. salignus* was very heavy and caused much distortion of leaves on elm, birch, maple, and ash in all areas of MINNESOTA, and was heavy on many weeping willows over MARYLAND late in the season. *L. salignus* was numerous in several areas of New Castle County, DELAWARE, where large quantities of honeydew attracted many bees and wasps. This species was heavy throughout NEW JERSEY during the late summer and early fall. BEECH BLIGHT APHID (*Prociphilus imbricator*) heavily infested beech trees in NEW JERSEY during the late summer and early fall.

PINE TORTOISE SCALE (*Toumeyella numismaticum*) became a serious problem on mugho pine in the Brainerd area of MINNESOTA. COTTONY MAPLE SCALE (*Pulvinaria innumerabilis*) was especially heavy and noticeable during July in areas of Ingham and Jackson Counties, MICHIGAN, and heavily infested hawthorn and maple, especially in northwestern NEVADA. Cottony maple scale was heavy on maples in Lassen County, CALIFORNIA. BLACK SCALE (*Saissetia oleae*) was heavier than normal and varied throughout California, while a SOFT SCALE (*Ehrhornia cupressi*) was active in a few locations of the State. EUROPEAN ELM SCALE (*Gossyparia spuria*) continued a problem on American elms in Santa Fe and San Juan Counties, NEW MEXICO, and was severe at Kanab in Kane County, UTAH. This species was common throughout Utah where dead limbs and trees were fairly common. *G. spuria* caused damage in the panhandle area of NEBRASKA and was severe in Sheridan County.

OBSCURE SCALE (*Melanaspis obscura*) was numerous on pin and willow oaks in suburban MARYLAND and controls were applied. Obscure scale was widespread in January in ARKANSAS, heavy on pin oaks in area of New Castle County, DELAWARE, and increased on oak trees throughout NEW JERSEY. AN ARMORED SCALE (*Fiorinia externa*) continues to spread and increase in severity in the Philadelphia area, PENNSYLVANIA, and now infests Philadelphia, Bucks, Chester, Delaware, Montgomery, and Berks Counties, but is not a problem in Berks County. Hemlock was the primary host although spruce and fir were affected. *F. externa* infested hemlock on an estate at Newport in Newport County, RHODE ISLAND, in March 1967 for a new State record. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) was normal on willow, lilac, and apple in Rhode Island but was heavy on black walnut in one area. Oystershell scale caused damage to hundreds of ash, lilac, willow, poplar, and other host trees throughout UTAH.

COMSTOCK MEALYBUG (*Pseudococcus comstocki*) was found for the first time in CALIFORNIA in 1967. Infestations were found in most mulberry trees in Porterville, Tulare County, and biological control was instigated. Marked success was evident by late 1967. A MEALYBUG (*Spilococcus juniperi*) infested native juniper in San Bernardino County and a PSYLLID (*Psylla uncatoides*) was severe on acacia trees in California. Another PSYLLID (*Euphyllura arbuti*) caused very evident damage to madrone in Napa County, California.

BIRCH LEAF MINER (*Fenusa pusilla*) caused a serious problem on shade and ornamental birches in MAINE. Outbreak populations caused almost complete defoliation in the northern areas where damage was especially severe on gray birch. White birch was also affected in these areas of the State. Birch leaf miner was heavy on ornamental birch throughout VERMONT. MOUNTAIN-ASH SAWFLY (*Pristiphora geniculata*) was heavy locally on mountain ash and Morraine locust in Warwick, RHODE ISLAND, and PEAR-SLUG (*Caliroa cerasi*) occurred in COLORADO. WILLOW SAWFLY (*Nematus ventralis*) damaged willow at Cooperstown and Lakota, NORTH DAKOTA, while a GALL WASP (*Callirhytis punctata*) caused damage to oak in Cavalier County. ELM SAWFLY (*Cimbex americana*) larvae were evident on elm at Ellendale and Abercrombie, North Dakota, and were found at Wolf Point, Roosevelt County, and at Terry in Prairie County, MONTANA. Predators and parasites kept populations under control in Montana.

A CECIDOMYIID MIDGE (*Cecidomyia* sp.) became a major problem where pinyon pines were grown as ornamentals in urban areas of COLORADO. ASH PLANT BUG (*Neoborus amoenus*) was very heavy on ash throughout MINNESOTA and *N. pacificus* heavily infested ash trees in Ventura, San Bernardino, and Alameda Counties, CALIFORNIA.

ERIOPHYID MITES infested leaves on maple, boxelder, ash, cherry, basswood, beech, elm, and other shade trees in VERMONT. Adults of an ERIOPHYID MITE (*Nalepella tsugifoliae*) were common on hemlock in a nursery in Peace Dale, RHODE ISLAND, on June 1. There was no conspicuous damage in the State. *N. tsugifoliae* was heavy on hemlock in the Richmond area of VIRGINIA in late June and early July. Populations were light in midsummer but began to increase again in October. MAPLE BLADDER-GALL MITE (*Vasates quadripedes*) was widespread in RHODE ISLAND and severely deformed maple foliage at Fargo, NORTH DAKOTA. CARMINE SPIDER MITE (*Tetranychus telarius*) was heavy and caused much discoloration to ornamental spruce and taxus in several areas of Portland, MAINE, by late August. SPRUCE SPIDER MITE (*Oligonychus ununguis*) was common on ornamental evergreens in RHODE ISLAND and heavily infested evergreens during late March in Yuma County, ARIZONA.

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